



Molecular switches

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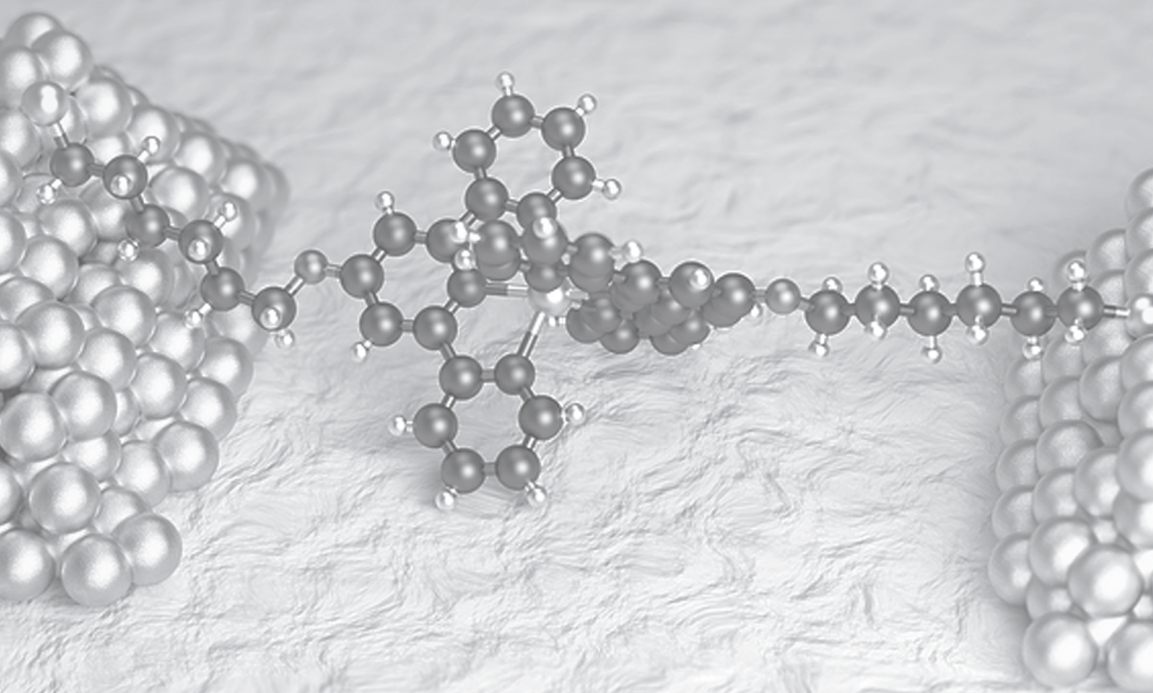
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Handbook of
**SINGLE-MOLECULE
ELECTRONICS**



Handbook of
**SINGLE-MOLECULE
ELECTRONICS**

edited by
Kasper Moth-Poulsen



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Preface

Since the first visionary publications about the concepts of single-molecule electronics came out about 40 years ago, the research field has evolved into a truly interdisciplinary effort attracting contributors from various disciplines such as synthetic chemistry, theoretical chemistry and physics, experimental physics, and electronic engineering. Although great progress in both experimental realizations and theoretical understanding of single-molecule devices has been made, making it possible (to some extent) to predict and design molecular electronic components with tailored properties is still a challenge and still many steps are to be taken to overcome them before we will see widespread use of computing devices based on single molecules.

The aim of this book is to introduce a new generation of scientists to the fascinating research field of single-molecule electronics. The book consists of an introduction plus 12 chapters seeking to give a balanced view of the research field as it is seen through the eyes of experts coming from different areas of research—from synthetic chemistry, through modeling to experimental approaches and systems view. Needless to say, this book could not have come about without the contributions of the authors, and I would like to take this opportunity to thank specifically Anders Bergvall, Andrey Danilov, Mikael Fogelström, Thomas Frederiksen, Tina A. Gschneidtner, Joshua Hihath, Jaap Hoekstra, Cecilia Holmqvist, Won H. Jeong, Tomas Löfwander, Titoo Jain, Sergey Kubatkin, Shubhaditya Majumdar, Jonathan A. Malen, Mogens B. Nielsen, Kasper Nørgaard, Pramod S. Reddy, Jos S. Seldenthuis, Gemma C. Solomon, Jos M. Thijssen, and Herre S. J. van der Zant. I would also like to thank Pan Stanford Publishing for this opportunity, my collaborators and co-workers at Chalmers University of Technology and abroad, and all

scientists who have and are currently contributing to bring single-molecule electronics research forward by creating a stimulating and creative world community. Finally, I would like to thank my family for their love and support.

This is the beginning!

Kasper Moth-Poulsen

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